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oligonucleotides of different sequence and from about 25 to 100 nucleotides in length that hybridize to the same target nucleic acid, wherein each unique oligonucleotide [is capable of hybridizing] hybridizes to a different region of the [corresponding] said target nucleic acid [of the probe oligonucleotide spot in which it is positioned].

REMARKS

I. AMENDMENTS.

In view of the above amendments and the following remarks, the Examiner is requested to withdraw the rejections and allow Claims 1-17, 53, and 57-59, the only claims pending and currently under Examination in this application.

Claims 1, 57 and 58 have been amended to is limit the arrays to ones in which each oligonucleotide probe composition of each probe spot contains two or more different probes of different sequence that hybridize to the same target nucleic acid. Support for this amendment can be found throughout the specification. See, e.g., page 15, lines 1-10. Claim 2 has been amended to bring the claim in line with amended claim 1 and remove language object to by the Examiner. Claims 10, 12, 14, 15, 16 and 17 have been amended in accordance with the Examiner's suggestion. As such, the above amendments introduce no new matter to the application and their entry by the Examiner is respectfully requested.

II. REJECTIONS.

A. Rejections Under 35 U.S.C. § 112, second paragraph.

Claims 1-17, 53, 57-59 have been rejected as being indefinite for a number of reasons. With respect to the term "corresponds" of issue "a," this term has been removed from the claims. With respect to the phrase "capable of hybridizing" of issue "b," this phrase has been removed from the claims. The issues "c," "d," "e" and "f" have been addressed through adoption of the Examiner's suggestions. With respect to issue "g" regarding the term "stably," this term has been removed from the claims. With respect to issue "h" regarding "corresponds," this term has been removed from the claims. With respect to issue "j"

regarding the pronoun "it," in view of the above amendments, this issue is believed to be resolved. In view of the above remarks and claim amendments, it is believed that this rejection may now be withdrawn. In sum, the Applicants submit that, in view of the above amendments and remarks, the rejection of Claims 1-17, 53, 57-59 under 35 U.S.C. § 112, second paragraph, is overcome and thus the Examiner is respectfully requested to withdraw these rejections.

B. Rejection Under 35 U.S.C. § 102.

Claims 1, 2, 5-10, 12-17, and 57-58 have been rejected under 35 U.S.C. § 102 as being anticipated by Brown et al (U.S. Pat. No. 5,807,522).

To anticipate a claim, the reference must teach every element of the claim. "A claim is anticipated [under §102] only if each and every element as set forth in the claim is found . . . in a single prior art reference." MPEP §2131 *citing* (Verdegaal Bros. V. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)).

As amended, the claimed array is limited in that each oligonucleotide probe composition on the array must contain two or more different probes of different sequence that hybridize to the same target nucleic acid. Claim 1 is illustrative and requires in relevant part:

"wherein each probe oligonucleotide spot comprises an oligonucleotide probe composition made up of a plurality of unique oligonucleotides, wherein said plurality comprises 2 or more unique oligonucleotides of different sequence that hybridize to the same target nucleic acid"

All of the claims as amended include the limitation that each probe oligonucleotide spot contains two or more different oligonucleotide probes of different sequence that hybridize to the same target nucleic acid.

Turning now to the cited reference, the rejection over Brown is based on the assertion that Brown et al discloses (1) an array wherein two or more oligonucleotide spots correspond to the same target nucleic acid (Col. 13, lines 1-10); (2) an array wherein all of the oligonucleotide spots hybridize to the same type of target nucleic acid (Col. 4, lines 60-64); and (3) an array wherein each probe oligonucleotide spot corresponds to a different target nucleic acid (Col. 18, lines 40-43).

In reviewing the Brown reference, it is clear that Brown fails to teach or even suggest an array on which each probe spot includes two or more different oligonucleotides of different sequence that hybridize to the same target nucleic acid. Because this limitation of the claimed invention is not taught by Brown, Brown fails to anticipate the claimed invention.

In sum, Claims 1, 2, 5-10, 12-17, and 57-58, which require each oligonucleotide spot to contain two or more different probes of different sequence that hybridize to the same target nucleic acid sequence, are not anticipated by Brown et al because Brown does not teach this limitation. Accordingly, Claims 1, 2, 5-10, 12-17, and 57-58 are not anticipated under 35 U.S.C. § 102 over Brown and this rejection may be withdrawn.

C. Rejection Under 35 U.S.C. § 103.

Claims 3-4 have been rejected under 35 U.S.C. § 103(a) over Brown et al in view of Fodor et al. (U.S. Pat. No. 5,800,992, filed June 25, 1996) for the asserted reason that Brown teaches all of the limitations of the claimed invention except for the placement of the probes on the array corresponding to non-overlapping or overlapping regions of a target nucleic acid, which is assertedly supplemented by the Fodor et al. reference.

The M.P.E.P. teaches that a proper *prima facie* case requires that a combined teaching of two or more references must teach or suggest all the claim limitations. The M.P.E.P. states in relevant part:

“To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. **Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.**” M.P.E.P. § 2142.

Thus, in order for a proper *prima facie* case to be made, the combined teachings of the cited references must teach or suggest all of the limitations of the claims.

In the present application, the Applicants are claiming an array which is limited in that each polynucleotide probe spot comprises two or more different probes of different sequence that hybridize to the same target nucleic acid, as explained above.

As demonstrated above, Brown fails to teach or suggest an array in which each spot must contain two or more different oligonucleotides of different sequence that hybridize to the same nucleic acid target.

For the following reasons, Fodor fails to make up this fundamental deficiency in the Brown reference. Fodor teaches that “probes of known . . . sequence may be immobilized to the matrix and a map of **various different target sequences** may be determined from overlaps.” (Col. 10, lines 9-12). Thus, Fodor suggests using probes to map or determine the sequential ordering of a plurality of various sequences using probes that hybridize to various different target sequences. In other words, different probe spots on the Fodor array may include probes that hybridize to different regions of the same target nucleic acid sequence. **However, each probe spot on the Fodor array is made up of identical probes, not two or more different probes of different sequence.** As such, Fodor fails to make up the fundamental deficiency in the Brown teaching.

As such, the combined teachings of the cited references fail to teach or suggest an array of probe oligonucleotide spots where each spot contains a plurality of unique oligonucleotides of different sequence that each hybridize to the same target nucleic acid. Because this limitation of the claimed invention is neither taught nor suggested by the combined teachings of the cited references, a proper *prima facie* case of obviousness has not been established.

In sum, because the combined teachings of Brown and Fodor fail to teach or suggest an array on which each oligonucleotide probe spot contains a plurality of unique polynucleotide probes containing two or more different probes of different sequence that hybridize to the same target nucleic sequence, Claims 3-4 are not obvious under 35 U.S.C. § 103(a) over these references and this rejection may be withdrawn.

Claims 11 has been rejected under 35 U.S.C. §103(a) over Brown in view of a Lockhart et. al. (U.S. Pat. No. 6,040,138, filed June 7, 1995) for the asserted reason that Brown teaches the array of the present invention but for the element of at least one mismatch probe on the array, which this missing element is provided by the Lockhart reference. However, as demonstrated above, the Brown fails to teach or suggest the fundamental limitation that each probe spot contain at least two different oligonucleotides of different sequence that hybridize to the same target nucleic acid. As Lockhart is cited solely for his teaching of mismatch probes, this reference fails to make up this fundamental deficiency of Brown. Accordingly, Claim 11 is not obvious over Brown in view of Lockhart and this rejection may be withdrawn.

Finally, Claims 53 and 59 have been rejected under 35 U.S.C. §103(a) over Brown et al. in view of a Stratagene catalog (1988), page 39 for the asserted reason that Brown teaches arrays of the claimed invention (i.e. the array according to Claim 1) but for the motivation to combine reagents with the array to make up the kit, which missing element is provided by the Stratagene reference. However, as demonstrated above, the Brown fails to teach or suggest the fundamental limitation that each probe spot contain at least two different oligonucleotides of different sequence that hybridize to the same target nucleic acid. As the Stratagene

reference is cited solely for the teaching of kits in general, this reference fails to make up this fundamental deficiency of Brown. Accordingly, Claims 53 and 59 are not obvious over Brown in view of Stratagene and this rejection may be withdrawn.

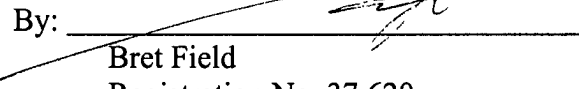
In view of the above amendments and remarks, this application is considered to be in good and proper form for allowance and the Examiner is respectfully requested to pass this application to issue.

The Commissioner is hereby authorized to charge any fees under 37 C.F.R. §§ 1.16 and 1.17 which may be required by this paper, or to credit any overpayment, to Deposit Account No. 50-0815.

Respectfully submitted,

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